

REMARKS

Reconsideration and allowance in view of the foregoing amendment and the following remarks are respectfully requested.

Claims 1-12 are now pending. Claim 1 has been amended for clarity and consistency with the final phrase of the claim.

The PTOL-326 that accompanied the Official Action referenced the drawings filed on February 27, 2002, but did not indicate whether they were accepted or objected to. Therefore, a set of formal drawings are submitted herewith to be substituted for the drawings original filed. It is now respectfully requested that the Examiner acknowledge acceptance of the herewith formal drawings in the next Official Communication.

Original claim 1-6 were rejected under 35 USC 102(b) as being anticipated by Yamaguchi. Applicant respectfully traverses this rejection.

Anticipation under Section 102 of the Patent Act requires that a prior art reference disclose every claim element of the claimed invention. See, e.g., Orthokinetics, Inc. v. Safety Travel Chairs, Inc., 806 F.2d 1565, 1574 (Fed. Cir. 1986). While other references may be used to interpret an allegedly anticipating reference, anticipation must be found in a single reference. See, e.g., Studiengesellschaft Kohle, G.m.b.H. v. Dart Indus., Inc., 726 F.2d 724, 726-27 (Fed. Cir. 1984). The absence of any element of the claim from the cited reference negates anticipation. See, e.g., Structural Rubber Prods. Co. v. Park Rubber Co., 749 F.2d 707, 715 (Fed. Cir. 1984). Anticipation is not shown even if the differences between the claims and the prior art reference are insubstantial and the missing elements could be supplied by the knowledge of one skilled in the art. See, e.g., Structural Rubber Prods., 749 F.2d at 716-17.

The present invention relates to a spark plug wherein the noble metal chip of the ground electrode is disposed so as to not overlap the tip of the center electrode either laterally or in the longitudinal direction. Thus, with reference to the illustrated embodiment, the ground electrode 40 includes a base material, i.e., the cylindrical bar 41, and noble metal chip 42 laser welded to the base material. The cylindrical bar 41 is located laterally of a top end portion of the center electrode 30 and is secured to the end surface 12 of the metal shell 10. The noble metal chip 42 extends from the end of the base material towards the center line J3, as illustrated in Figure 3, above the top end of the center electrode 30 to define a spark gap G. The edge 43 and the edge 45 of the noble metal ground electrode 42 are located within a range defined inside imaginary lines K1 and K2 so that they do not overlap with the center electrode tip 32 in vertical and horizontal directions, as schematically illustrated in Figure 3. This feature is discussed in detail on pages 9, 10 and 16 of the specification.

The above structure avoids the dislodgement of the noble metal ground electrode tip 42 due to spark-caused wear thereof, thus resulting in improved thermal resistance and durability of the ground electrode 40. This leads to an increases service life of the spark plug 100. Moreover, the center electrode 30 does not overlap with the noble metal chip 42, thus improving the ignitability of the spark plug.

The Examiner characterizes Yamaguchi, Figure 19 in particular, as allegedly disclosing a ground electrode tip and "fused portion" located within a range defined by a line extending from the tip of the center electrode in a lateral direction and a second line extending from a portion of the center electrode closest to the ground electrode in a longitudinal direction parallel to the longitudinal center line of the center electrode, so that the tips don't overlap. Applicant respectfully disagrees. The structure illustrated in Figure 19 of Yamaguchi does not show a fused portion formed by melting a portion of the base material and the noble metal chip together. The disclosure in column 8, lines 34 + describes that there is a groove formed in the ground electrode 8 for receiving the noble metal tip, which is welded in place. It is not clear whether any fused portion is

formed. But if it is, any resulting fused portion would appear to be at or below a lateral, first line extending from the tip end of the center electrode. Note that even the forward most corner of the ground electrode at the base if the end exposed chip is at or below the "first line" and thus the fused portion is not disposed within the range recited in applicants claim 1, so that the Yamaguchi tip does not meet the limitation that the "ground electrode tip and said fused portion tip do not overlap with the tip of the center electrode". New claims 7, 8, 11 and 12 have been added to underscore that in exemplary embodiments according to the invention, the entire noble chip is disposed within the range and/or the entire fused portion is disposed within the range. Since in the Figure 19 embodiment of Yamaguchi the noble metal chip and fused portion extend well below the first line, these claims are clearly not anticipated.

New dependent claim 9 provides that a second portion of the ground electrode extends toward, perpendicular to, the longitudinal axis of the center electrode. The embodiment shown in Yamaguchi's Figure 19 does not teach such a ground electrode configuration. The remaining embodiments of Yamaguchi demonstrate a complete disregard for the characteristic recited in applicant's independent claim 1, because all other embodiments of Yamaguchi without question provide for lateral or vertical overlap of the noble metal tips.

Regarding claim 2, the Examiner refers to Figure 13 of Yamaguchi and spacings allegedly disclosed therein. It is respectfully submitted, however, that the Examiner did not refer to the Figure 13 embodiment in his rejection of the subject matter of claim 1. The Examiner referred only to Figure 19 embodiment as allegedly anticipating claim 1. Claim 2 depends from claim 1 and incorporates the limitations thereof. It is improper for the Examiner to rely on sizings allegedly disclosed in the Figure 13 embodiment of Yamaguchi when the Figure 13 embodiment does not meet the limitations of claim 1 which of necessity are included in the subject matter of claim 2. Even if the Figure 19 embodiment of Yamaguchi anticipates claim 1, which the applicant submits it does not,

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the Figure 19 embodiment of Yamaguchi does not teach or suggest the subject matter of claim 2 so that a rejection of claim 2 is improper.

With reference to claim 5, the Examiner again refers to the Figure 13 embodiment of Yamaguchi. However, the Figure 13 embodiment of Yamaguchi does not meet the limitations of claim 1, from which claim 5 depends. Therefore, the Examiner's rejection based on Figure 13 of Yamaguchi cannot be sustained.

In view of the foregoing, it is respectfully submitted that the invention of claims 1-6 and of new claims 7-12 is not anticipated by nor obvious from Yamaguchi.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in condition for allowance and an early Notice to that effect is earnestly solicited.

Respectfully submitted,

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